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High Tibial Osteotomy & Distal Femoral Osteotomy Rehabilitation Protocol

Phase / Goals	Immobilization	ROM	Therapeutic Exercises
Phase 1 (0-2 weeks) Goals: - Control joint pain & hemarthrosis - Regain 0 deg extension	- Hinged brace locked until return of quadriceps control - Toe-touch weight bearing x 6 weeks	- PROM 0-90 deg - AAROM 30-90 deg - Patellar mobilization - Modalities PRN	- Ankle Pumps - Hamstring/gastroc stretching - SLR - Wall slides, heel slides on table - Active quad isometrics (multi-angle 0, 45 & 60 deg) - Knee extension (active assist 90-30 deg) - Extension mobilization
Phase 2 (3-6 weeks) Goals: - Muscle control - Edema control	- Hinged brace 0-90 - TTWB x 6 weeks	- PROM 0-110 deg - AAROM 0-90 deg - Patellar mobilization - Modalities PRN	- Include all from phase 1 - Isometric training 0-60 deg - S/L clam shells - Prone knee flexion - Can begin upper body weight training/conditioning - Stationary bike for ROM w/ no resistance - BFR – may initiate 15 days post op
Phase 3 (7-12 weeks) Goals: FWB by 10 weeks, full ROM	- Progress by 25% each week for FWB with normalized gait - D/C hinged brace at 8 weeks	- PROM 0-130 deg - AAROM then progress to AROM 0-110 - Continue hamstring and gastroc stretching - Patellar mobilization	- SLR's – ankle weight not to exceed 10% of body weight - Closed kinetic chain- wall sits, mini-squats, light leg press (10-70 deg) - Upper body conditioning, stationary bike w/ no resistance, water walking. - Aqua jogging at 9 week mark - Toe raises & balance series at 10 week mark

Phase 4 (13-16 weeks) Goals: • Maintain Full A/PROM • Normalize gait	• FWB • No brace	• Full A/PROM • Patellar mobilizations	• SLR's (with rubber tubing, CKC (closed chain) • Mini-squats, Wall sits (0-30) • Hamstring curls (active, 0-90) • Leg press (70-10) • Upper body conditioning • Stationary bike with light resistance • Elliptical
Phase 5 (17-20 weeks) Goals: • Increase strength & endurance • Progress to jogging/running	• FWB • No brace	• Full A/PROM	• Continue Phase 4 exercises • Closed chain M70-10 deg in squats (0-40) • Lateral step-ups (2-4) uni-squats (0-40) • Hamstring curls (active 0-90) • Leg press (70-10 deg) • Start balance training, 2-legged balance board, single leg stance • Aerobic conditioning: bike, water walk, swimming (straight kick), walking • Begin impact activities and walk to jog program • Elliptical, stair machine (low resistance)
Phase 6 (21-24 weeks) Goals: • Regain normal muscle strength – quads, hamstring, etc. • Regain normal proprioception, balance, and sports coordination	• FWB • No brace	• Full A/PROM	• Continue and advance all Phase 5 strengthening activities • Balance training: continue from Phase 5 • Aerobic conditioning: increase resistance as necessary below threshold of knee pain • Clearance from Dr. Flikkema prior to return to sport

RETURN-TO-SPORT CRITERIA:

- No functional complaints
- Radiographic healing on x-ray
- Confidence when running, cutting, jumping at full speed
- 90% isometric quadriceps strength
- 90% contralateral values on hop tests
 - Clearance to return to sport dependent upon progress with PT and discussion with Dr. Flikkema